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## WHAT IS CLAIMED IS:

1	1. A method of chemically ligating two oligopeptides, wherein a first
2	oligopeptide thioester having an acidic C-terminal amino acid, said acidic C-terminal amino
3	acid having a thioester moiety, a side chain, and a side chain protecting group such that said
4	side chain protecting group substantially prevents rearrangements between atoms of said side
5	chain and atoms of said thioester moiety, is contacted with a second oligopeptide having an
6	N-terminal amino acid under chemical ligation conditions such that said thioester moiety of
7	said first oligopeptide thioester ligates to said N-terminus of said second oligopeptide to form
8	an oligopeptide or polypeptide product.
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1	2. The method of claim 1 wherein said side chain protecting group is
2	selected from the group consisting of 9-fluorenylmethyl ester, (phenylsulfonyl)ethyl ester,
3	2,2,2-trichloroethyl ester, and a phenacyl ester.
1	3. The method of claim 2 wherein said side chain protecting group is a
2	phenacyl ester having the formula:
3	-CH(R <sup>13</sup> )-CO-(C <sub>6</sub> H <sub>4</sub> )-R <sup>14</sup>
3 4	wherein R <sup>13</sup> and R <sup>14</sup> are each electron-donating groups.
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1	4. The method of claim 3 wherein R <sup>13</sup> and R <sup>14</sup> are each alkyl having from
2	1 to 3 carbon atoms.
1	5. The method of claim 4 wherein R <sup>13</sup> is methyl or ethyl.
1	6. The method of claim 2 wherein said N-terminal amino acid of said
2	second oligopeptide is cysteine or an amino acid with a removable ethylthiol moiety.
1	7. The method of claim 1 wherein one of said first and second
2	oligopeptide is attached to a solid support.
1	8. An oligopeptide thioester defined by the formula:
2	$Xaa_{i}$ $Xaa_{m}$ -CO-NH-CH[(CH <sub>2</sub> ) <sub>n</sub> -CO-O-R <sup>12</sup> ]-CO-SR <sup>11</sup>
3	wherein:
4	each Xaai is independently a protected or unprotected amino acid for i=1 to m;
5	m is an integer from 2 to 70;

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6	n is an integer equal to 1 or 2;
7	R <sup>11</sup> is a member selected from the group consisting of alkyl having from 1 to 6 carbon
8	atoms, alkylaryl having from 6 to 8 carbon atoms, -CH2-CONH2,
9	-CH <sub>2</sub> CH <sub>2</sub> CONH <sub>2</sub> , and -(CH <sub>2</sub> ) <sub>k</sub> -CO-Xaa, wherein subscript k is an integer
10	equal to 1 or 2 and Xaa is an amino acid; and
11	R <sup>12</sup> is a carboxy protecting group.
1	9. The oligopeptide of claim 8 wherein R <sup>12</sup> is selected from the group
2	consisting of 9-fluorenylmethyl ester, (phenylsulfonyl)ethyl ester, 2,2,2-trichloroethyl ester,
3	and a phenacyl ester.
1	10. The oligopeptide of claim 9 wherein R <sup>12</sup> is a phenacyl ester defined by
2	the formula:
3	$-CH(R^{13})-CO-(C_6H_4)-R^{14}$
4	wherein R <sup>13</sup> and R <sup>14</sup> are each an electron-donating group.
1	11. The oligopeptide of claim 8 wherein said oligopeptide thioester is
2	attached to a solid support.